

WHAT IS CLAIMED IS:

1. A method for assessing vascular endothelial function, comprising;

a stimulation step of giving stimulation for inducing a release of endothelium-derived relaxing factors from vascular endothelium to a specified region of the artery in a living body,

a pre-stimulation measurement step of measuring, before said stimulation step, almost simultaneously first pulse-wave-conduction-velocity-relating information which is a pulse-wave-conduction-velocity-relating information related to the velocity at which a pulse conducts through the first segment including a part or a whole of the specified region of the artery and second pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information of the artery in the second segment almost symmetric to said first segment with respect to the median plane,

a post-stimulation measurement step of measuring said first pulse-wave-conduction-velocity-relating information and said second pulse-wave-conduction-velocity-relating information after said stimulation step, and

a comparative value calculation step of calculating

respectively the pre-stimulation comparative value representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and the post-stimulation comparative value representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step.

2. The method for assessing vascular endothelial function according to Claim 1, wherein said first segment is a segment from the heart to a specified point on said artery and said second segment is a segment almost symmetric to a segment from the heart to a specified point on said artery with respect to the median plane.

3. The method for assessing vascular endothelial function according to Claim 1, wherein

in said pre-stimulation measurement step, an almost simultaneous measurement is carried out for third pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at the predetermined third segment closer to the central side rather

than said first segment with regard to said artery and also for fourth pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at a fourth segment almost symmetric to said third segment with respect to the median plane, in addition to the first pulse-wave-conduction-velocity-relating information and the second pulse-wave-conduction-velocity-relating information,

in said post-stimulation measurement step, an almost simultaneous measurement is carried out for the third pulse-wave-conduction-velocity-relating information and the fourth pulse-wave-conduction-velocity-relating information, in addition to the first pulse-wave-conduction-velocity-relating information and the second pulse-wave-conduction-velocity-relating information, and

in said comparative value calculation step, respective calculations are carried out for the pre-stimulation comparative value on the central side representing a difference or ratio of the third pulse-wave-conduction-velocity-relating information to the fourth pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and also for

the post-stimulation comparative value on the central side representing a difference or ratio of the third pulse-wave-conduction-velocity-relating information to the fourth pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step, in addition to the pre-stimulation comparative value on the peripheral side representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and the post-stimulation comparative value on the peripheral side representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step.

4. The methods for assessing vascular endothelial function according to Claim 1, wherein

 said comparative value calculation step is a step of calculating successively said post-stimulation comparative values, and further comprising

 a vascular endothelial dysfunction judgment step for judging an impairment in vascular endothelial function on the basis of the fact that an absolute value of a difference between

a peak value of the post-stimulation comparative value and the pre-stimulation comparative value calculated successively by the comparative value calculation step is at or lower than a predetermined judgment standard value.

5. A method for assessing vascular endothelial function, comprising;

a stimulation step of giving stimulation for inhibiting the release of endothelium-derived relaxing factors from vascular endothelium and also for inhibiting vascular dilation resulting from the release of said endothelium-derived relaxing factors to a specified region of the artery in a living body,

a pre-stimulation measurement step of measuring, before said stimulation step, almost simultaneously first pulse-wave-conduction-velocity-relating information which is pulse-wave-conduction-velocity-relating information related to the velocity at which a pulse conducts through the first segment including a part or a whole of the specified region of the artery and second pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information of the artery in the second segment almost symmetric to said first segment with respect to the median plane,

a post-stimulation measurement step of measuring said

first pulse-wave-conduction-velocity-relating information and said second pulse-wave-conduction-velocity-relating information after said stimulation step, and

a comparative value calculation step of calculating respectively the pre-stimulation comparative value representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and the post-stimulation comparative value representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step.

6. The method for assessing vascular endothelial function according to Claim 5, wherein said first segment is a segment from the heart to a specified point on said artery and said second segment is a segment almost symmetric to a segment from the heart to a specified point on said artery with respect to the median plane.

7. The method for assessing vascular endothelial function according to Claim 2, wherein
in said pre-stimulation measurement step, an almost

simultaneous measurement is carried out for third pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at the predetermined third segment closer to the central side rather than said first segment with regard to said artery and also for fourth pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at a fourth segment almost symmetric to said third segment with respect to the median plane, in addition to the first pulse-wave-conduction-velocity-relating information and the second pulse-wave-conduction-velocity-relating information,

in said post-stimulation measurement step, an almost simultaneous measurement is carried out for the third pulse-wave-conduction-velocity-relating information and the fourth pulse-wave-conduction-velocity-relating information, in addition to the first pulse-wave-conduction-velocity-relating information and the second pulse-wave-conduction-velocity-relating information, and

in said comparative value calculation step, respective calculations are carried out for the pre-stimulation comparative value on the central side representing a difference

or ratio of the third pulse-wave-conduction-velocity-relating information to the fourth pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and also for the post-stimulation comparative value on the central side representing a difference or ratio of the third pulse-wave-conduction-velocity-relating information to the fourth pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step, in addition to the pre-stimulation comparative value on the peripheral side representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said pre-stimulation measurement step and the post-stimulation comparative value on the peripheral side representing a difference or ratio of the first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained at said post-stimulation measurement step.

8. The methods for assessing vascular endothelial function according to Claim 5, wherein

 said comparative value calculation step is a step of calculating successively said post-stimulation comparative

values, and further comprising

a vascular endothelial dysfunction judgment step for judging a reduction in vascular endothelial function on the basis of the fact that an absolute value of a difference between a peak value of the post-stimulation comparative value and the pre-stimulation comparative value calculated successively by the comparative value calculation step is at or lower than a predetermined judgment standard value.

9. An apparatus for assessing vascular endothelial function, comprising;

an arterial occlusion apparatus for occluding arteries in a specified region in a living body for more than a predetermined time,

a pulse-wave-conduction-velocity-relating information measurement apparatus for measuring successively said first pulse-wave-conduction-velocity-relating information which is a pulse-wave-conduction-velocity-relating information related to the velocity at which a pulse conducts through the artery in the first segment including a part or a whole of the specified region of said artery and the second pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information of the artery in the second segment almost symmetric to said first

segment with respect to the median plane, and comparative value calculating means for calculating the pre-ischemic comparative value representing a difference or ratio of said first pulse-wave-conduction-velocity-relating information to said second pulse-wave-conduction-velocity-relating information before ischemia by said arterial occlusion apparatus and also for calculating the post-ischemic comparative value representing a difference or ratio of said first pulse-wave-conduction-velocity-relating information to said second pulse-wave-conduction-velocity-relating information after release from ischemia (arterial occlusion) by said arterial occlusion apparatus.

10. The apparatus for assessing vascular endothelial function according to Claim 9 wherein said first segment is a segment from the heart to a specified point on said artery and said second segment is a segment almost symmetric to a segment from the heart to a specified point on said artery with respect to the median plane.

11. The apparatus for assessing vascular endothelial function according to Claim 9, wherein

 said comparative value calculating means is for calculating successively said post-ischemic comparative value,

and further comprising

a vascular endothelial dysfunction judgment means for judging an impairment of vascular endothelial function on the basis of the fact that an absolute value of a difference between a peak value of the post-ischemic comparative value and the pre-ischemic comparative value calculated successively by the comparative value calculating means is at or lower than a predetermined judgment standard value.

12. The apparatus for assessing vascular endothelial function according to any of Claim 9, wherein

said comparative value calculating means is for calculating successively said post-ischemic comparative value, and further comprising

an output apparatus for illustrating graphically changes over time in comparative values calculated successively by said comparative value calculating means.

13. The apparatus for assessing vascular endothelial function according to any of Claim 9, wherein

said first segment is closer to the peripheral side than a region of arterial occlusion by said arterial occlusion apparatus,

said pulse-wave-conduction-velocity-relating information measurement apparatus is for measuring almost

simultaneously the third pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at the specified third segment closer to the central side rather than said arterial occlusion region and the fourth pulse-wave-conduction-velocity-relating information which is said pulse-wave-conduction-velocity-relating information at the fourth segment almost symmetric to said third segment with respect to the median plane, in addition to said first pulse-wave-conduction-velocity-relating information and the second pulse-wave-conduction-velocity-relating information, and

said comparative value calculating means is for calculating respectively the pre-ischemic comparative value on the central side representing a difference or ratio of said third pulse-wave-conduction-velocity-relating information to said fourth pulse-wave-conduction-velocity-relating information obtained before ischemia by said arterial occlusion apparatus and post-ischemic comparative value on the central side representing a difference or ratio of the third pulse-wave-conduction-velocity-relating information to the fourth pulse-wave-conduction-velocity-relating information obtained after release from ischemia (arterial occlusion) by

said arterial occlusion apparatus, in addition to the pre-ischemic comparative value on the peripheral side representing a difference or ratio of said first pulse-wave-conduction-velocity-relating information to the second pulse-wave-conduction-velocity-relating information obtained before ischemia by said arterial occlusion apparatus and post-ischemic comparative value on the peripheral side representing a difference or ratio of said first pulse-wave-conduction-velocity-relating information to said second pulse-wave-conduction-velocity-relating information obtained after release from ischemia (arterial occlusion) by said arterial occlusion apparatus.